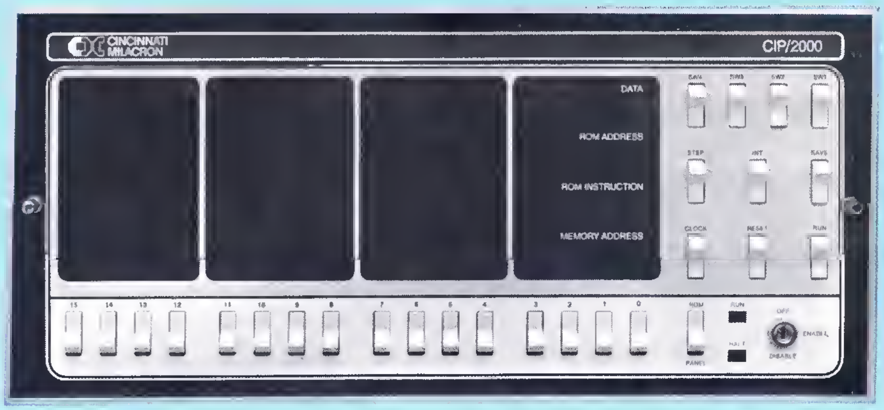
2100 HAS SET OF ROMS
2200 superset of 2100
string manip
...

2200 = $160 OVER 2100

CIP/2100

CIP/2100
CIP/2100
CIP/2100
CIP/2100
CIP/2100



CIP/2100
CIP/2100
CIP/2100
CIP/2100

CIP/2100

CIP/2100 MINICOMPUTER . . .

reliable, rugged, flexible, easy to use, economical.

Not just words to catch your eye, but the reasons why the CIP/2100 is the best general-purpose mini-computer for you.

The CIP/2100 was designed with the OEM user in mind. That's why the hardware is rugged and reliable, and the programming so flexible. "Easy to use" comes naturally with well-designed software, complete documentation, a people-oriented front panel, and for good measure, training courses in programming and maintenance. As for economical, a CIP/2100 is surprisingly low cost and a liberal OEM discount is available.

Good service isn't just a word either. Whether it's help with programming problems or on-time delivery you want or prompt field service, we've got the people and the skills to meet your needs.

FEATURES

- Full memory cycle speed of 1.1 microseconds
- Hardware multiply and divide
- Expandable priority interrupt system
- 89 standard instructions
- I/O — serial, parallel, DMA
- Concurrent I/O data transfer
- Modular design for economical expansion

OPTIONS

- Real-time clock
- Automatic power-fail/restart
- Memory parity
- Memory protect
- Communications interfaces
- Peripheral controllers

INSTRUCT

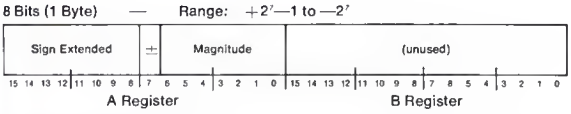
OPERATION CODE	MNEMONIC	INSTRUCTION NAME		TIME (microseconds)
0 0	HLT	Halt		5.72
0 1	TRP	Trap		15.84
0 2	ESW	Enter Sense Switches		4.84
0 3	PMP	Protect Memory Page		5.72
0 4	DIN	Disable Interrupt System		4.84
0 5	EIN	Enable Interrupt System		4.84
0 6	DRT	Disable Real Time Clock		4.84
0 7	ERT	Enable Real Time Clock		4.40
0 8	RO1	Reset Overflow and Set Word Length to 1		5.28
0 9	RO2	Reset Overflow and Set Word Length to 2		5.28
0 A	RO3	Reset Overflow and Set Word Length to 3		5.28
0 B	RO4	Reset Overflow and Set Word Length to 4		5.28
0 C	SO1	Set Overflow and Set Word Length to 1		5.28
0 D	SO2	Set Overflow and Set Word Length to 2		5.28
0 E	SO3	Set Overflow and Set Word Length to 3		5.28
0 F	SO4	Set Overflow and Set Word Length to 4		5.28
34	NOP	No Operation		
Conditional Jump				
1 0	JOV	Jump if Overflow Set	Jump	8.58
			No Jump	6.82
1 1	JAZ	Jump if A Equal to Zero	Jump	8.58
			No Jump	7.70
1 2	JBZ	Jump if B Equal to Zero	Jump	8.36
			No Jump	7.48
1 3	JXZ	Jump if X Equal to Zero	Jump	8.14
			No Jump	7.26
1 4	JAN	Jump if A Negative	Jump	8.36
			No Jump	7.48
1 5	JXN	Jump if X Negative	Jump	8.14
			No Jump	7.26
1 6	JAB	Jump if A Equals B	Jump	9.24
			No Jump	8.36
1 7	JAX	Jump if A Equals X	Jump	9.02
			No Jump	8.14
1 8	NOV	Jump if Overflow not Set	Jump	7.70
			No Jump	7.70
1 9	NAZ	Jump if A not Equal to Zero	Jump	8.58
			No Jump	7.70
1 A	NBZ	Jump if B not Equal to Zero	Jump	8.36
			No Jump	7.48
1 B	NXZ	Jump if X not Equal to Zero	Jump	8.14
			No Jump	7.26
1 C	NAN	Jump if A not Negative	Jump	8.36
			No Jump	7.48
1 D	NXN	Jump if X not Negative	Jump	8.14
			No Jump	7.26
1 E	NAB	Jump if A not Equal to B	Jump	9.24
			No Jump	8.36
1 F	NAX	Jump if A not Equal to X	Jump	9.02
			No Jump	8.14
Shift				
2 0	LLA	Logical Left A		5.94
2 1	LLB	Logical Left B		5.94
2 2	LLL	Logical Left Long		5.94
2 4	LRA	Logical Right A		5.94
2 5	LRB	Logical Right B		5.94
2 6	LRL	Logical Right Long		5.94
2 8	ALA	Arithmetic Left A		5.94
2 9	ALB	Arithmetic Left B		5.94
2 A	ALL	Arithmetic Left Long		5.94
2 C	ARA	Arithmetic Right A		5.94
2 D	ARB	Arithmetic Right B		5.94
2 E	ARL	Arithmetic Right Long		5.94
Input/Output				
3 0	IBS	Input Byte Serially		86 ms
3 1	IBA	Input Byte to A		8.36
3 2	IBB	Input Byte to B		8.80
3 3	IBM	Input Byte to Memory		14.30
3 4	NOP			3.52
3 8	OBS	Output Byte Serially		100 ms
3 9	OBA	Output Byte from A		8.36
3 A	OBB	Output Byte from B		9.24
3 B	OBM	Output Byte from Memory		14.52
Register Operate				
4 0	ORA	OR B with A		6.38
4 1	XRA	Exclusive — OR B with A		6.38
4 2	ORB	OR A with B		6.60
4 3	XRB	Exclusive — OR A with B		6.60
4 4	INX	Increment X		7.04
4 5	DCX	Decrement X		7.04
4 6	AWX	Add Word Length to X		7.04
4 7	SWX	Subtract Word Length from X		7.04
4 8	INA	Increment A		7.04
4 9	INB	Increment B		7.04
4 A	OCA	One's Complement A		6.60
4 B	OCB	One's Complement B		6.60
4 C	TAX	Transfer A to X		7.04
4 D	TBX	Transfer B to X		7.04
4 E	TXA	Transfer X to A		7.26
4 F	TXB	Transfer X to B		7.26

IONS SET

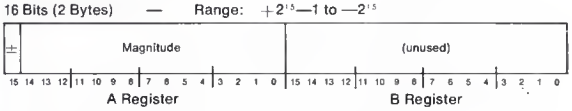
OPERATION CODE	MNEMONIC		INSTRUCTION NAME	TIME (microseconds)
Memory Referencing Instruction				
Fixed Word Length				
6 0	JMP		Jump	3.52
6 8	RTJ		Return Jump	6.38
7 0	IWM		Increment Word in Memory	5.94
7 8	DWM		Decrement Word in Memory	5.94
8 0	LDX		Load X	5.94
8 8	STX		Store X	5.94
9 0	MUL	(Minimum)	Multiply	55.66
		(Average)		63.36
		(Maximum)		70.40
9 8	DIV	(Minimum)	Divide	83.60
		(Maximum)		90.86
Variable Word Length				
A 0	ADA		Add to A	5.06
A 8	ADV	(1 Byte)	Add Variable	6.82
		(2 Bytes)		6.38
		(3 Bytes)		9.46
		(4 Bytes)		9.02
B 0	SBA		Subtract from A	5.50
B 8	SBV	(1 Byte)	Subtract Variable	7.26
		(2 Bytes)		6.82
		(3 Bytes)		9.90
		(4 Bytes)		9.46
C 0	CPA		Compare A	4.84
C 8	CPV	(1 Byte)	Compare Variable	4.84
		(2 Bytes)		5.72
		(3 Bytes)		7.48
		(4 Bytes)		8.58
D 0	ANA		And A	5.50
D 8	ANV	(1 Byte)	And Variable	7.26
		(2 Bytes)		6.82
		(3 Bytes)		9.90
		(4 Bytes)		9.46
E 0	LDA		Load A	5.50
E 8	LDV	(1 Byte)	Load Variable	7.26
		(2 Bytes)		6.82
		(3 Bytes)		9.90
		(4 Bytes)		9.46
F 0	STA		Store A	4.62
F 8	STV	(1 Byte)	Store Variable	3.74
		(2 Bytes)		5.06
		(3 Bytes)		8.80
		(4 Bytes)		10.12
Addressing Modes				
A 0	ADA	Direct Page 0	Add to A—Page 0	5.50
A 1	ADA	Direct Relative	Add to A—Relative	6.60
A 2	ADA*	Indirect Page 0	Add to A—Indirect Page 0	8.80
A 3	ADA*	Indirect Relative	Add to A—Indirect Relative	9.90
A 4	ADA—	Indexed	Add to A—Indexed	5.06
A 5	ADA+	Indexed with Bias	Add to A—Indexed With Bias	5.94
A 6	ADA/	Extended	Add to A—Extended Address	6.60
A 7	ADA=	Literal	Add to A—Literal	
		Fixed Length		7.92
		Two Byte with A		8.36
		Variable		7.92
		Indirect Jumps		10.78

DATA FORMATS

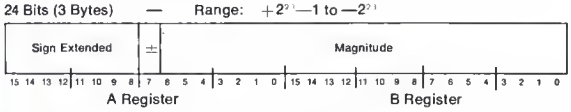
8 Bits (1 Byte) — Range: $+2^7-1$ to -2^7



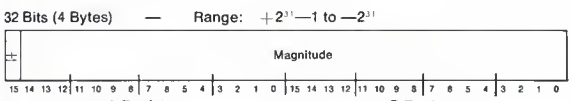
16 Bits (2 Bytes) — Range: $+2^{15}-1$ to -2^{15}



24 Bits (3 Bytes) — Range: $+2^{23}-1$ to -2^{23}



32 Bits (4 Bytes) — Range: $+2^{31}-1$ to -2^{31}



SPECIFICATIONS

- Clock Rate 4.55 mHz (crystal controlled)
- Core Memory 1.1 microsec full-cycle. Modules of 4,096 bytes (8, or 9-bit) to maximum of 32,768 bytes.
- Arithmetic Multiprecision, parallel, binary, fixed point, two's complement.
- Addressing Eight modes including relative, index, indirect, and literal.
- Input/Output 8-bit parallel byte I/O bus for programmed and fully automatic concurrent transfers. Serial I/O interface for teletypes or similar devices. Direct Memory Access (DMA) channel with maximum transfer rate of 909,000 bytes per second.
- Interrupts A priority interrupt system allows internal interrupt on power failure, real-time clock, memory parity error, and external interrupts on the byte I/O bus. Up to 64 interrupts expandable in groups of 8.
- Logic TTL logic elements including MSI types, in DIP ceramic packages. DTL circuitry for I/O interfaces.
- Registers Six operational registers including A-accumulator, B-auxiliary accumulator, X-indexed, P-program counter, W-2-bit word length mode and O-1-bit overflow flag.
- Instructions 89 standard instructions including 17 control, 16 conditional jump, 12 shifts, 8 input/output, 16 register operate, 18 memory reference, 1 multiply, and 1 divide.
- Cabinet The processor, memory to 16K, I/O interfaces, power supply and fan are enclosed in a cabinet 8¾″ high, 19″ wide, and 23″ deep. Fully expanded cabinet weighs 75 pounds.
- Power 115/230 vac, 50-60 Hz. 340 watts.
- Environment 0 - 50 C (32 - 122 F)
- Panels The *system control panel* displays all registers, manual command execution, and control switches. The *basic control panel* provides only the basic control switches.
- Software Cross assembler in Fortran IV, Two-Pass Assembler, Teletype Operating System, Tape Editor, CIP/2000 Simulator.

AVAILABLE PERIPHERAL INTERFACES

- Teletype
- 300 LPS Paper Tape Reader
- DRPE Paper Tape Punch
- 400 CPM Card Reader
- 300 LPM Line Printer
- Tape Cassette
- CRT

SALES OFFICES

CINCINNATI REGIONAL OFFICE
Mason-Morrow Road, Lebanon, Ohio 45036
(513) 494-5444

CHICAGO REGIONAL OFFICE
2635 South Clearbrook Drive
Arlington Heights, Illinois 60005
(312) 439-5726

DETROIT REGIONAL OFFICE
28500 Southfield Road
Lathrup Village, Michigan 48075
(313) 557-2700

NEW YORK REGIONAL OFFICE
702 Rahway
Union, New Jersey 07083
(201) 687-4500

LOS ANGELES REGIONAL OFFICE
3720 South Sante Fe Avenue
Los Angeles, California 90058
(213) 582-8361

minicomputers

CINCINNATI MILACRON

Cincinnati Milacron Company | Cincinnati, Ohio 45209

Machine Tools
Process Controls
Chemicals
Plastics
Plastics Processing Machinery
Abrasives

CTL-355